D301.81:27/9

Combat Crew

strategic air command

UNIVERSITY OF FLORIDA LIBRARY
SEP 1977
DOCUMENTS DEPT

★ ★ ★ ★

SEPTEMBER 1977

Combat Crew

Magazine of the Strategic Air Command - 28th Year of Publication

GEN. RICHARD H. ELLIS
COMMANDER IN CHIEF, SAC

MAJ. GEN. EARL G. PECK
Deputy Chief of Staff, Operations

COL. JOHN R. SHIPE
Director of Safety

STAFF

LT. COL. RICHARD W. BLATTER
Editor

G. FRANCIS FARRELL
Associate Editor

SrA GERALD F. MORIARTY
Art Editor

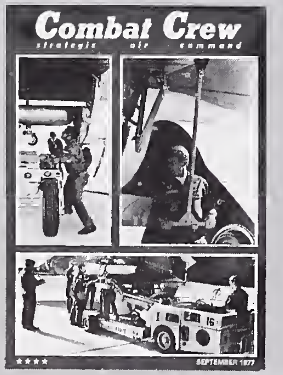
MARY JANE ABBOUD
Editorial Assistant

FLARE

UNIV. OF FLORIDA LIBS.
DOCUMENTS
DEPARTMENT
U.S. DEPOSITORY

IN THIS ISSUE

GIANT SWORD 77 4
Circadian Rhythm 8
Air Force Aviator Views Navy 12
Unspoken Risks 16
Big Instrument 18
Crew View 20
Pacer Plank 22
Ops Hazards 26



ON OUR COVER

This month's cover includes scenes from the 1976 Munitions Loading Competition. For details on the 1977 edition of GIANT SWORD, see the feature on page 4.

SACRP 127-1 VOL. XXVI No. 9 SEPTEMBER 1977

COMBAT CREW is an internal publication of the Stragegic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all accidents printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with accident stories are fictitous. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF. Contributions are encouraged, as well as comments and criticisms. Direct correspondence with the Editor is authorized. Address correspondence to Editor, COMBAT CREW, Hq. SAC (DOSE), Offutt AFB, Ne. 68113.

Brigadier General Patrick J. Halloran became the SAC Inspector General on 1 June 1977. A native of Chatfield, Minnesota, and a graduate of Troy State University in Alabama, he possesses an extensive background in Air Force and SAC operations. He has flown combat missions in Korea and Southeast Asia and has had many years of reconnaissance in both the U-2 and the SR-71. He has flown over 20 different types of military aircraft, from the British Harrier to the B-52. He has served in a variety of wing level positions including crew commander, operations officer, and wing commander. In addition, he served as Vice Commander of the Third Air Division and Chief of Staff of Fifteenth Air Force. His decorations include the Legion of Merit, Distinguished Flying Cross, Meritorious Service Medal, Air Force and Army Commendation Medals.

READINESS/EFFECTIVENESS

Brigadier General Patrick J. Halloran
HQ SAC Inspector General

Readiness, as a condition of our forces, is receiving particular attention in the Air Force and SAC today. In my capacity as the SAC Inspector General, I see my responsibilities as twofold; primarily readiness will continue to receive emphasis because it is the single most important element in the viability of our national security posture today, and secondly, the managerial practices within the command will be evaluated to ascertain whether we are operating in the most efficient and economical manner possible.

Readiness is a relatively simple term to define. Webster defines "ready" as being prepared or equipped to act immediately. This coincides with our measurement of readiness which is "how fast, and with what effect can peacetime forces be used in time of need?" Who are the most ready military people in the world? I would have to say Missilemen . . . . After all, when the whistle blows they don't scramble from an alert posture, they don't immediately begin generating or reconfiguring the bulk of their weapon systems . . . . they can immediately **expend ordnance** against an enemy force. **That's** the ultimate of readiness! No one else can enjoy the posture that their system routinely provides. That posture, however, is neither attained nor maintained with ease. It is only an example of an extreme state of readiness in keeping with Webster's definition.

There are several reasons why we continue to emphasize readiness in our force structure. Primary among these reasons is today's political environment and the continued development by the Soviets and others of not only more sophisticated weaponry but more in absolute numbers. This advancement by a potential adversary and its capability leaves us in a position where we have little or no time for preparation should any hostile action be initiated.

In addition, we are faced with accomplishing our job of defense with both leaner forces in terms of manpower and fewer dollars. These factors dictate that every aspect of our forces must be ready and prepared to carry out their responsibilities at a moment's notice.

What is involved in preparing our forces to be in a continued state of readiness? It encompasses all facets of any unit operation. It is the equipment, people, leadership, knowledge, maturity, teamwork, and discipline that combine to keep us prepared. It not only means that our aircraft are ready to fly and our missiles prepared to launch but also the most (seemingly) insignificant torque wrench is calibrated and kept in condition to do its job. Readiness means that our aircrews are prepared to fly, our missile crews are vigilant, our mechanics are completely trained, and our drivers know the directives governing their operation; in short, every individual is trained and motivated to do his job.

How do we insure that our people attain the desired state of readiness? Personnel must be trained to follow directives and technical orders to accomplish their tasks in the most efficient manner possible. Initiative must be encouraged by supervisors and superiors alike to continually look for better ways of doing the job. An in-depth evaluation program closes the loop and insures the viability of training and provides continual assessment of personnel proficiency.

There is one key factor that pulls all these various organizational functions together so that the contributions to readiness are made in unity. It is leadership from the first line supervisor to the highest level manager. It is their responsibility to provide the continued motivation and training of personnel. These are the men and women who insure directives are followed and that unit requirements and responsibilities are fully understood.

Unit readiness is evaluated by the SAC Inspector General (IG) during the Operational Readiness Inspection (ORI). Each unit is observed under simulated combat conditions to determine how effectively equipment and personnel resources are managed. The results of the ORI give Headquarters SAC and the unit the means of determining how effectively the unit is prepared to accomplish its mission.

The follow-on Management Effectiveness Inspection deals with just what its title indicates — "management effectiveness." Are you not only doing your present job effectively, but are you alert for innovations and methods to accomplish it in more economical terms with fewer resources? By this I do not mean "shortcut" operations, or "California free-style," but effective, long term improvements that affect the operations both at unit level and throughout the command. You will find that certain operational aspects are unit peculiar, but this factor does not take it out of the context of efficient and economical management.

How can you benefit most from an inspection? Use the inspector. Pick his brain for ways and methods of improving your operation. He has an advantage — he is not only an expert, as you are, but he has seen every like operation and managerial problem in the command. If your unit isn't better after a visit by one of my teams then they aren't doing their job (or you're perfect). Likewise, if you are considering an innovation you're not yet satisfied with, present it to him and get his ideas and suggestions. Also, remember the IG doesn't have to be visiting your unit for you to use his capabilities. His ideas are crossfed to your unit through reports of other units' ORIs. Refer to these crossfeed reports. They contain the IG checklists.

Finally, perhaps the most difficult but most important evaluation is that of quality of leadership. Are personnel motivated and are they appropriately and adequately recognized for their contributions and achievements? The leader has an immense effect on the performance to those whom he leads. His qualities, personal and professional, exert a decisive influence and contribute directly to the readiness of our national defense forces. It is this total capability that provides the force readiness to respond immediately to any threat. I am dedicated to helping you achieve that capability. So, the next time you see our collectively smiling faces as we disembark from an unannounced KC, remember that we are really "here to help you." ★

GIANT SWORD

Scenes From the 1976 Giant Sword Competition

'77

UNIVERSITY OF FLORIDA LIBRARIES
SEP 1977
DOCUMENTS DEPT.

GIANT SWORD, SAC's 1977 Munitions Loading Competition, will be held September 12-21 at Ellsworth AFB. Each of SAC's 20 bomb wings will be represented by a competition team composed of a five-person munitions load crew, an aircraft crew chief, a six-member security police element and a team officer and noncommissioned officer.

No actual weapons will be loaded. Using training devices only, each munitions crew will be required to upload two different classes of weapons: a gravity weapon, and either a short range attack missile or conventional "iron" bombs.

The competition is designed to enhance esprit de corps, promote a competitive spirit among units, improve loading proficiency and security police skills, and aid in the evolution of new concepts.

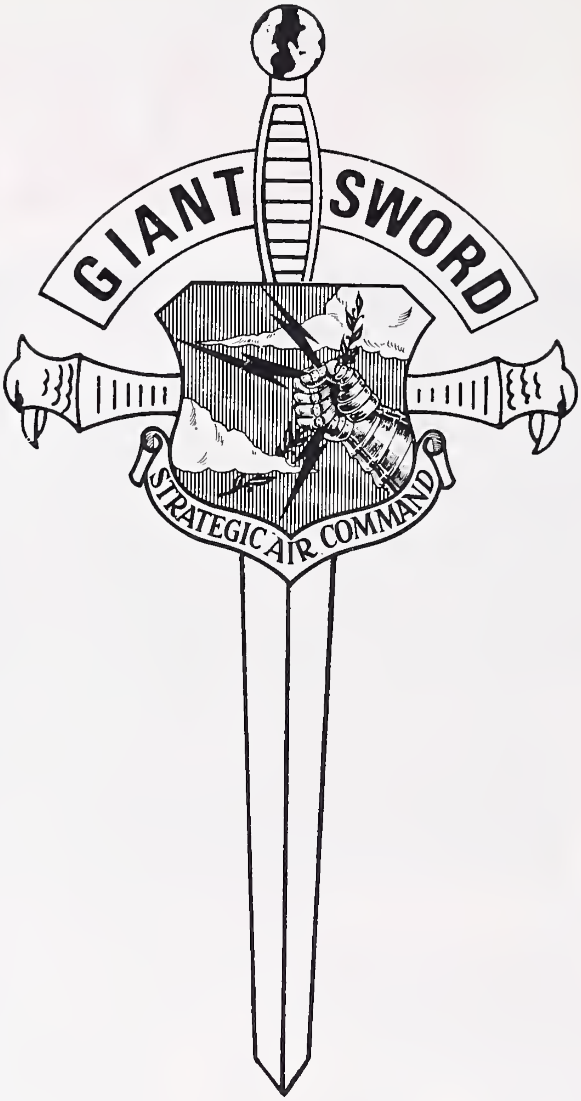
Munitions loading will be accomplished on four types of aircraft: a B-52 D, G and H, and an FB-111. In addition to the two loadings, each team will also be evaluated on the condition of its equipment and by a written test. The max possible score for each loading team will be 1500 points.

Security police teams will be scored to a max of 500 points. Realistic security situations involving the protection of alert bomber aircraft and weapons will be staged for each team in addition to a written test and M-16 rifle firing.

The HQ SAC Director of Munitions, Col Alton W. Powell, will be the 1977 GIANT SWORD munitions loading competition commander. The competition deputy commander for munitions matters will be Lt Col John W. Haley III and the GIANT SWORD deputy commander for security police matters will be Lt Col John E. Lehning.

HISTORY

The first SAC Munitions Loading Competition was held at MacDill AFB in March 1958 with the 29th Aviation Depot Squadron from Homestead AFB taking top honors. A second competition, hosted by March AFB was held in October 1958. From there, the competition moved to Bergstrom



AFB for the next two years.

With the advent of the war in Southeast Asia, the competition was suspended for 13 years. During those 13 years, SAC munitions personnel proved their professionalism and capabilities by supporting the Southeast Asia effort, while at the same time maintaining SAC's primary mission of strategic deterrence.

The Munitions Loading Competition was reborn in 1974 with the renewal of the Bombing and Navigation Competition at Barksdale AFB and was held concurrently at Blytheville AFB. Aircraft crew chiefs were included as integral members of the munitions load crews. The 93d MMS from Castle AFB won the "Best in SAC" trophy at the 1974 meet.

The 1975 competition at Ellsworth AFB was expanded to include an aircraft security police element. With the addition of security procedures to the competition, the day-to-day munitions loading team effort is accurately demonstrated. SAC's GIANT SWORD is teamwork, not weapons. We are meeting again to have the edge of that sword honed and determine who is the "Best in SAC."

In the 1975 competition, Castle's 93d Bomb Wing retained its title as the best munitions unit in the Strategic Air Command. Last year, Carswell's 7th Bomb Wing won the Barrentine Trophy and was proclaimed the "Best of the Best" in the 1976 competition. For their success, the 7th Bomb Wing was awarded and still retains the "Best in SAC" trophy. This year, all participating units will have a chance to gain the honor that Carswell so skillfully won in 1976.

1976 GIANT SWORD WINNERS

Best Munitions Competition Team (Barrentine Trophy) — 7th BMW, Carswell AFB.

Best Security Police Unit — 97th SPS, Blytheville AFB.

Best Aircraft Crew Chief — 379th OMS: SSgt Ted Scoggins, Wurtsmith AFB.

Best Munitions Team — 7th MMS, Carswell AFB.

Best Security Police Practical Exercise — 97th SPS, Blytheville AFB.

Best Academic Excellence — 93d SPS, Castle AFB.

Best Security Policy Marksmanship — 97th SPS, Blytheville AFB.

Best Loads — 379th MMS, Wurtsmith AFB.

Best B-52 Load — 28th MMS, Ellsworth AFB.

Best FB-111 Load — 509th MMS, Pease AFB.

Best SRAM Load — 379 MMS, Wurtsmith AFB.

AWARDS

The Barrentine Memorial Trophy. This trophy is awarded to the wing whose competition team compiled the highest overall score. The winning wing will retain the trophy for one year. A plaque will be awarded for permanent retention by the wing. Each member of the winning team will receive a chalice, certificate and winner's patch for permanent retention.

Best Munitions Load Crew in SAC. This award goes to the winning munitions maintenance squadron to serve as recognition of the outstanding achievements of its load crew. The winning wing will also retain this trophy for one year. A plaque will be awarded for permanent retention by the unit. Each member of the MMS load crew and the OMS crew chief will be awarded a chalice, certificate and winner's patch for permanent retention.

Giant Sword Best Security Police Unit. The security police trophy is awarded to the winning security police squadron to serve as a testimonial to the outstanding achievements of its security police team. The trophy will be retained for one year. A plaque will be awarded for permanent retention by the unit. Each member of the security police team will also receive a chalice, certificate and a winner's patch for permanent retention.

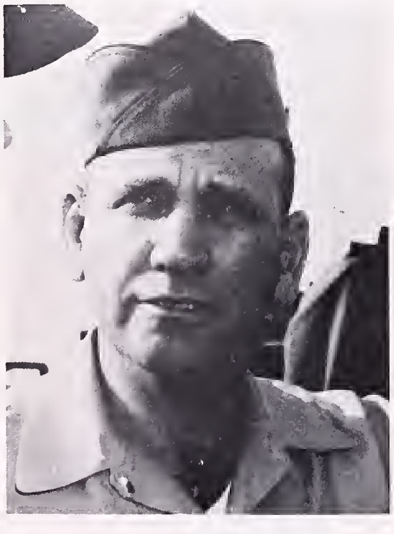
A plaque will be awarded to the load crew that scores the highest total points for two loads, to the security police element having the highest score in the practical exercise and to the best aircraft crew chief. Plaques are to be retained permanently by units. Suitable awards will be awarded to each member of the winning team in each category.

Giant Sword '77 will be a keenly competitive event. Each year there has been an increase in the proficiency and knowledge displayed at the loading competition. This year will be no different. Good luck to all participants — the competition is going to be tough!

CMSgt. Wilbur R. Barrentine
Memorial Munitions Loading Trophy

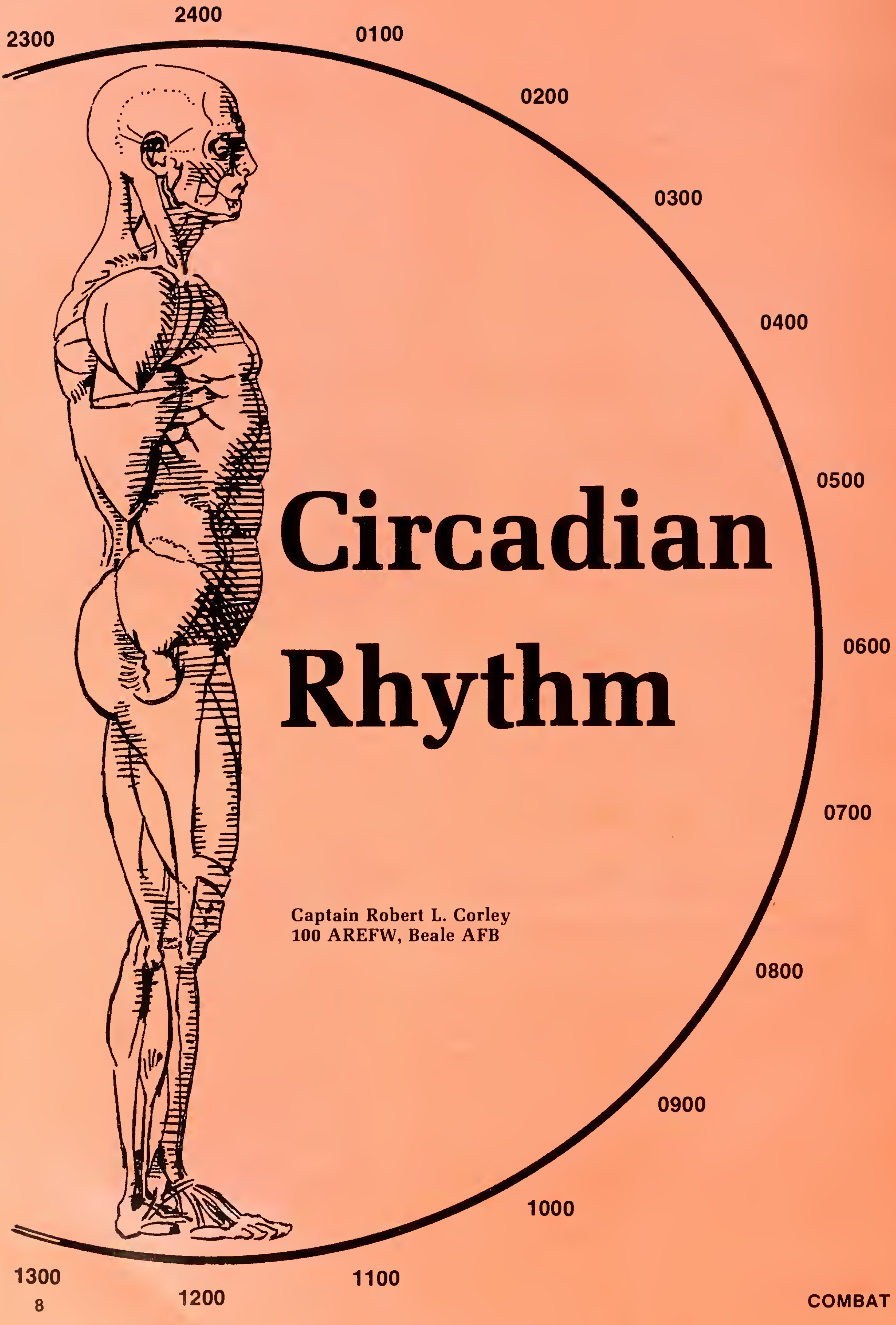
CMSgt. Wilbur R. Barrentine Memorial Munitions Loading Trophy

The trophy memorializes the late Chief Master Sergeant Wilbur R. Barrentine who is remembered by his supervisors and fellow workers as a "people oriented" manager. Chief Barrentine was associated with Strategic Air Command munitions loading from the mid-1950s until his death in September 1970 while serving on active duty. He made significant contributions to SAC's commandwide munitions safety record during his career. His experience and managerial ability helped munitions loaders throughout SAC convert from a stateside nuclear alert mission to an active conventional weapons loading role during the conflict in Southeast Asia.



Circadian Rhythm

Captain Robert L. Corley
100 AREFW, Beale AFB



Time is a significant factor in man's life, particularly the life of a SAC crewmember. Most of what we do is based upon critical timing. An indication of the importance of time to crewmembers is the never ending search for the ultimate watch from acutron to chronograph to quartz to Zone II. Our jobs require that we be able to perform critical tasks at all hours of the day or night all over the world. Most of what we do is based upon a 24 hour day/night cycle, and that is what this article is concerned with, the relationship between the circadian rhythm cycle and our performance.

There are many functions of the body that operate on either a daily, monthly, or yearly cycle, but the 24 hour or circadian rhythm is one of the most important. The word circadian comes from the Latin *circa* meaning "about" and *dies* meaning "day." Thus, circadian means "about a day." There are over 100 functions or activities in man that follow a circadian rhythm. This rhythm varies in length from 20 to 28 hours depending on the individual. The various rhythms will vary in length from day to day and are normally synchronized to conform to such external factors as light/dark cycles, meals, clocks, etc. These external factors are referred to as Zeitgebers, from the German meaning *"time givers."*

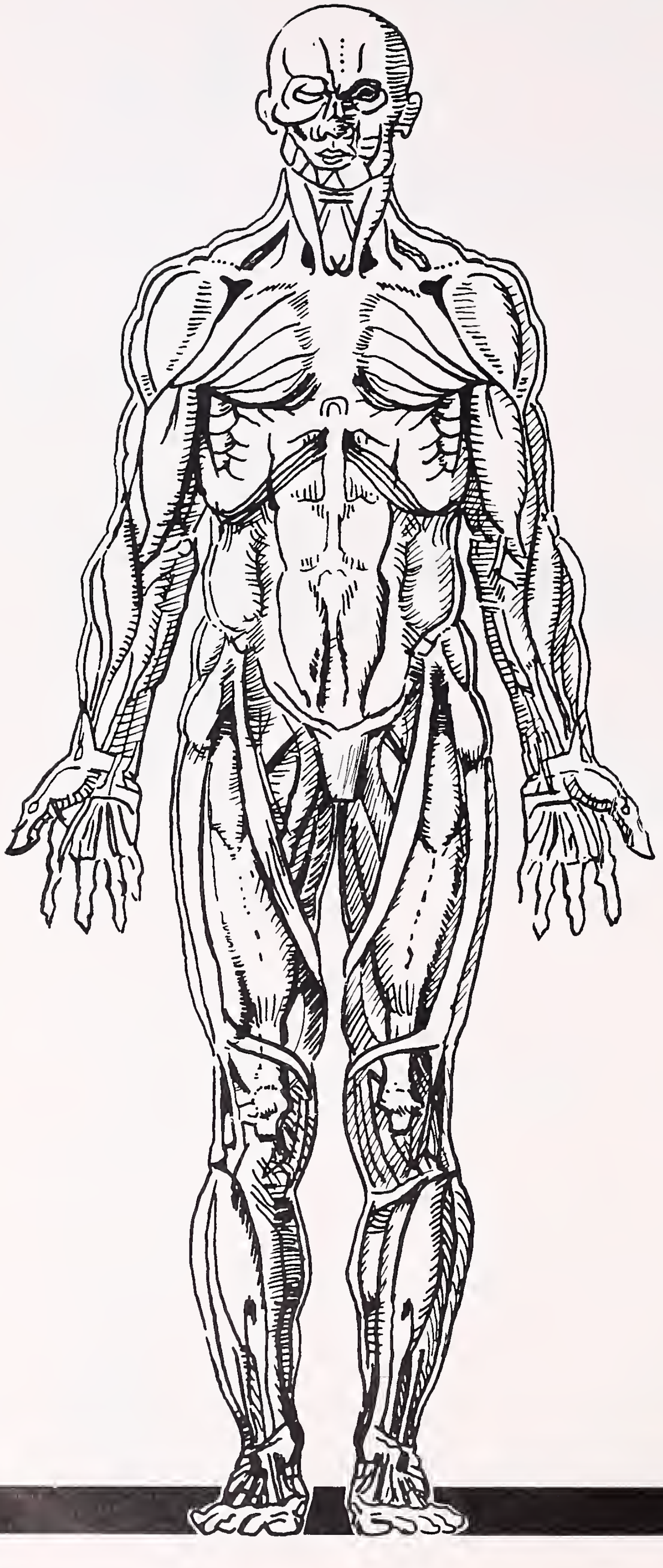
Body temperature is an example of a function that follows a circadian pattern. Figure 1 shows the sinusiodal pattern followed by body temperature. Performance also follows this basic circadian pattern, and this is what is important to us as crewmembers — the relationship between performance and circadian rhythm.

There are two basic ways in which the effects of circadian rhythm on performance should be considered. The first has to do with how circadian rhythm affects us on a daily basis. Figure 2 shows the graph of our basic performance curve. If a crewmember were scheduled to fly as shown, his performance would be nearing its lowest level during the mission. He would be required to perform a critical task, landing, at the lowest point on his performance curve. Due to the nature of the Air Force mission, it is often necessary to schedule operations at night or in the early morning. Although careful attention is usually given to allowing for adequate rest, the effect of circadian rhythm on performance is usually ignored.

The second way that circadian rhythm affects our performance results from travel across several time zones. This is often referred to as "Jet Lag." It is referred to by aeromedical authorities as circadian dysrhythmia or desynchronosis. The problem is caused when the numerous physiological rhythms in our body become out of phase with the external clues (Zeitgebers) such as light/dark cycle, meals, social functions, and activities of people around us. This problem is very common in today's Air Force where a person can rapidly travel to a time zone where the Zeitgebers are completely out of phase with his body rhythms. The effect of this on his performance can be disastrous.

A good example of this problem was the experience of my crew on a recent TDY to the European TTF at RAF Mildenhall, United Kingdom. We departed Beale at 0700 local time for Griffiss AFB, where we were to RON and then proceed to Mildenhall. We arrived at Griffiss at 1530 local, checked into the BOQ, had a goomburger at the club, and settled into our rooms for a good night of crew rest. The only problem was we were not scheduled to depart for Mildenhall until 2100 local time, the next night. After a good night's sleep, we were up all day prior to departing Griffiss for Mildenhall. We all tried to sleep during the afternoon prior to the flight, but our bodies were still on California time and it was the middle of the day there. We departed Griffiss at 2200 local time, and after a six hour flight, arrived at Mildenhall at 0900 local. Now we were at our destination, after having crossed eight time zones, missed one night's sleep, and flown a total of 11 and one-half hours. It was 0900 in the morning and all the local Zeitgebers were saying start the day, but our bodies had been up for approximately 18 hours and it was 0100 Beale time, so all we wanted to do was go to bed. Instead, we had to inprocess, mission plan for a night mission the next day, and then start our crew rest. Had we flown the mission as scheduled we would have had a very high potential for error. The mission was scheduled as a heavyweight takeoff on a night-cell air refueling. Fortunately for our crew, the mission was delayed 24 hours, and we had a chance to rest and let our bodies adjust to the new time zone. This incident is just one example of how the problems associated with our circadian rhythm can affect us and our performance.

The effect on performance varies with the individual and is dependent upon the magnitude and direction of the time zone change, as well as the length of time spent in different time zones. In most individuals, time shifts from east to west produce the most significant effects on his performance level. They also require a longer period for adjustment than a west to east shift. Studies have also shown that a return to the home zone requires less time to adjust and has a less detrimental affect on performance.



Fatigue is another factor that has a direct relationship to the effects of circadian rhythm on performance. At any point in the circadian performance cycle mental and/or physical fatigue can further degrade the level of performance. Since the amount of fatigue increases as the mission progresses, a crewmember can find himself at the end of a long flight suffering from physical and mental fatigue, and also at a low point in his circadian performance cycle. An example of this is a pilot making a landing after a long deployment flight to an overseas location. Coupled with bad weather, this could be a high accident potential situation. Perhaps this type situation led to the birth of the saying, "Flying is hours and hours of sheer boredom followed by a few seconds of sheer terror."

What about recovery? Once we have arrived at a new location after crossing numerous time zones, how long does it take to adjust? Again, it varies with the individual, but numerous studies on the subject have revealed some recovery times. Following a complete time reversal (day-night shift), the blood amino acids are the fastest to adjust taking approximately 48 hours. The digestive system takes about one day for each time zone crossed. The adjustment of heart rate takes about five days, body temperature about eight days, and the sleep pattern takes about 14 days.

One of the main problems on a continuing trip is that the effects of sleep deprivation become increasingly difficult to bear. This is a significant problem for air crews who are continually moving without ever adjusting to the new time zone. Most of the commercial airlines have developed systems to compensate for this with their aircrews, either through increased layover time or additional flight time credit for east-west flights.

The International Civil Aviation Organization (ICAO) has developed a formula for computing the time required to readjust the body rhythms. The recovery time is computed as follows:

Travel time (in hours) divided by two, plus time zones in excess of four crossed, plus departure time coefficient, plus arrival time coefficient, equals the rest period in tenths of days. Departure and arrival times are local times. For example, a trip from Montreal to London departing at 1900 and arriving at 0600 would be computed as follows using Figure 3. (The trip takes six hours and crosses five time zones)

$$\frac{6}{2} + 1 + 3 + 3 = 10 \text{ tenths of days}$$

So the recommended recovery time would be one day. Many companies now allow their employees paid periods for layover and recovery after long trips.

What can we do about the problem? Obviously the Air Force does not have a system that guarantees us complete recovery time after long trips. How many times have crews been required after a long trip to go immediately into crew rest for an important mission.

Probably the most important thing we can do as individuals is recognize the problem. Be aware of the problems associated with circadian rhythm and how they can affect you. As supervisors and managers we can schedule activities to occur during normal waking hours as much as possible within mission requirements. When possible, plan missions with adequate layover times enroute and with adjustment periods provided at the arrival point. Also, avoid rotation of personnel through several work shifts. When this is not possible, avoid scheduling critical or dangerous tasks during the periods of lower performance on the circadian pattern.

Since fatigue causes significant deterioration in performance, adequate rest prior to scheduled activity is essential. This is particularly true when the activity is scheduled to occur during a low point in the performance cycle. Also avoid excesses of food, drink, and activity as they are not conducive to good performance and also contribute to increased fatigue levels.

The use of drugs such as stimulants and sedatives is not normally recommended. However, under certain circumstances the flight surgeon may prescribe sedatives to induce sleep or the use of stimulants for maintaining alertness near the end of a long mission. In all cases, medication of any type should only be used at the direction of a flight surgeon and under his strict supervision.

Extensive studies of aircrew performances have revealed that it is possible to call up a reserve capacity to improve performance during periods of low levels on the circadian cycle and that the reserve is necessary to assure normal levels of performance.

The complications associated with circadian rhythm will be a problem for us as long as we continue to travel across the 24 time zones dividing the earth. To be effective managers of Air Force resources, we need to be aware of these problems and how they affect our performance and the performances of others. Although much of this article was devoted to how circadian rhythm affects the performance of crewmembers, the information is relevant to anyone who might be required to travel extensively, or who is involved in or supervises shift work. As individuals we can all be aware of the effects of circadian rhythm on our own performances, and be ready to call up that reserve capacity when necessary.

An Air Force pilot talks about Navy operations

Editor's note: This is the continuation of a two-part interview which features a Navy and an Air Force pilot who have served tours under the Interservice Officer Exchange Program. In Part I, Lt Commander Andy Sewall provided a Naval aviator's view of Air Force operations. This mouth, an Air Force pilot gives his view of Navy operations.

The Air Force pilot asked to remain anonymous. An experienced F-4 pilot, he had his exchange tour with a Navy carrier-based squadron where he achieved the distinction of becoming a "Centurion," making 100 arrested landings during his tour.

Q. What was your general reaction to Navy carrier flight ops?

A. How about "WOW!" It was really something! All the procedures for carrier ops are written down, but there's no way you can read about them and really know what it's like. I guess I didn't really start figuring out what was going on until I had about 50 landings. Up until then, I was just reacting by rote.

Q. What did you consider the most dangerous aspect of carrier ops?

A. Oh, night carrier landings, without a doubt.

Q. As an experienced F-4 pilot, what was the most difficult thing you had to adjust to in the Navy?

A. Probably the landings. I came to the Navy with almost 2000 hours in *Phantoms,* and at that stage of the game, it's pretty hard to change your technique. All these years I had been taught not to abuse an aircraft, and now, all of a sudden, I was expected to plant the aircraft. It's just hard to break habit patterns, particularly after the aircraft has become so familiar to you.

Q. What do you think is the basic philosophic difference between the Air Force and Navy attitudes toward flight operations and safety?

A. I think the Air Force is more restrictive. The Air Force is specific on what you can do, and everything else is prohibited. The Navy lays out everything you can't do, and the rest is allowed.

Q. What do you think are the operational and safety repercussions of the Air Force's philosophy?

A. Well, the young Air Force pilot can get into trouble when he finds himself in a position where the procedures have not been laid out for him. Since his flight training is structured, he could get himself in trouble if he gets into an unusual situation without set solutions and procedures. As an extension of this philosophy, the typical young Air Force pilot is probably more cautious in what he undertakes with his aircraft because he doesn't want to approach an unknown regime.

For example, the new Air Force pilot knows departures are not allowed, so he probably doesn't fly his aircraft close to the departure point. The Navy pilot, on the other hand, realizes he is probably going to depart the aircraft inadvertently; he trains for it, and then when it does happen, it is not so unexpected or dangerous.

Q. As a matter of fact, the Navy A–7 RAG initiated a program of intentional departures in February 1975, and since that time, there have been no departure-related accidents.

A. That's true. The Air Force has approved a comparable program for its A–7s.

Q. Back to your earlier comment — are you saying, then, that Air Force pilots don't fly their aircraft to the limit of the envelope?

A. I don't think you can categorize *all* Air Force pilots. The best pilots in the Navy and the best pilots in the Air Force are probably about the same, because there is only so much you can do with an airframe. And the worst pilots in the two services are about the same, too. But the average young Navy pilot probably does more with his aircraft than does his Air Force counterpart, simply because he has been allowed to do more, from his training days on. Solo ACM in the Air Force training command, for instance, is completely unthinkable.

Q. That's an interesting point, because every time the Navy has an accident, such as an ACM/stall/spin type, the move is to become more restrictive. For instance, after several such losses, our training command actually cut out all solo ACM hops and required instructors to ride with the students. The solo program was eventually reestablished, however.

A. That's the Air Force approach. When an accident occurs, the tendency is to add a new restriction or regulation. We are going to crash a few aircraft in the process of getting combat-ready. The trick is to minimize the losses while maximizing the realistic training.

Q. How do you think a less restrictive policy affects the Navy's safety program?

A. I would think it would be advantageous, since the pilot would be better able to cope with unusual situations.

Q. How do you account, then, for the fact that the Air Force has a better safety record than the Navy, even if you remove the carrier-based statistics and compare the same shorebased aircraft?

A. Is it really? I wasn't aware of that. I'm not really sure what the explanation is. I think maintenance is a factor. I would say that the overall condition of the aircraft in the Air Force was better than it was in the Navy. I'd say that 50 percent of the aircraft I manned in the Navy could have been downed by Air Force standards, things like hydraulic leaks. The Air Force seems to be stricter on its aircraft preflights and postflights, and fixes the small problems before they become big problems.

Q. But you flew the aircraft because you wanted the flight time, just like the Navy pilots.

A. Yes, I did. I'm as much of a flight time hound as the next guy. Besides, when in Rome, do as the Romans do!

Q. How do you explain the difference you experienced in Navy and Air Force maintenance?

A. I think the training the Navy enlisted men get isn't on a par with what the Air Force technicians get. Or if he does get the training, other factors prevent him from developing in a comparable fashion. For instance, the Air Force mech gets an intensive schooling in the area of his specialization just prior to reporting to his maintenance outfit.

Q. The Navy has A schools that are attended by selected individuals right out of boot camp.

A. Yeah, but then look what happens. He gets assigned TAD to mess cooking for 3 months, then to first lieutenant for compartment cleaning, and then he goes into the shop. By that time, he's probably forgotten an awful lot. His subsequent training is then pretty much in the hands of the shop — OJT. The Air Force technician goes right into a shop after his formal training without these long breaks.

Q. What other duties and responsibilities does the Air Force technician have, in addition to maintaining aircraft?

A. That's about it. The Air Force has specialized forces such as security police that relieve the technicians of many of the military duties required of Navy personnel, particularly aboard ship.

Q. How did the availability of aircraft rank in the Air Force versus the Navy?

A. Well, the Air Force works under a different concept of maintenance than the Navy, but I'd have to say the Air Force has better availability. Take, for example, the RTU (Readiness Training Unit, comparable to the Navy RAG). When an Air Force jock reports aboard a RTU, he is told the exact day he is going to complete, and he finishes on that date. The Navy pilot, on the other hand, is not sure when he is going to finish the RAG, and his completion date is subject to many changes. There were some first tour types in the RAG when I went through that had been there in excess of 1 year, primarily, I would say, because of aircraft availability. That's great for their golf game, but it doesn't do much for their flying.

Q. The common impression in the Navy is that the Air Force has virtually unlimited funds, so while the Navy has to make do with what it has, the Air Force can buy all the spare parts, GSE, etc., that they need. Do you think this is an accurate portrayal?

A. I'm not really qualified to comment on budgetary matters. But I've heard this argument before — that the Navy has to buy ships, submarines, etc. — and I'm not sure it's valid. The Air Force has to buy missiles and other nonflying material, too. Without being an expert, I'd say the Air Force supply system seems better. We rely on computer listings, so if a high priority part is needed, it can be located anywhere in the world and can be available ASAP, if the priority demands it. I realize the awesome logistics problems a carrier poses, however.

Q. The Navy has traditionally prided itself on its can-do attitude. Do you think this has any impact on the Navy's supply system?

A. Certainly! Since the Navy is apparently willing to accept less than full system aircraft or less than completely operational support equipment, there may be no real pressure to get the problems fixed in a timely manner. If that pressure were applied, I think the situation would improve. For example, my squadron had been having trouble getting up radar systems. Therefore, we decreed that the aircraft was not up unless it had an operable radar system. We then put the onus on AIMD to provide the up systems. After our op-ready rate went down and the responsibility was attributed to AIMD, we started getting results.

Q. How about GSE? I've heard that GSE in the Air Force can be moved only so far, and if the appropriate unit is down, the flight does not launch. This puts pressure to ensure sufficient and ready GSE.

A. I'm not really familiar with that procedure, but I will say this. The GSE was bad at the NAS where I was stationed. Every morning, the squadrons would line up at the GSE pool and end up drawing one tractor and one huffer for the whole squadron. More often than not, it was in tough shape. I just shook my head somedays when I saw the equipment hooked up to my aircraft, but as the driver put it, "Do you want a start or not?"

Q. Let's talk some about Air Force flight training. How would you compare the first tour Navy aviator with the first tour Air Force aviator?

A. As I mentioned before, I think the Navy first tour pilot has been allowed to do more, so he is probably somewhat more capable when he first joins a squadron. The difference narrows with experience, however.

Q. What was your overall evaluation of the first tour naval aviator?

A. Very impressive.

Q. Once a pilot gets his wings and joins a squadron, how do the Air Force collateral duties (nonflying) compare with the Navy's? Since the Navy operates under the philosophy that its pilots are officers first and aviators second, our junior pilots have considerable administrative duties right from the start of their careers.

A. Overall, I'd say that the Air Force junior pilot has less to do, although there are many additional duties which detract from the flying-mission. We don't have branch and division officers, for instance, because maintenance is removed from the immediate squadron activity. We do assign things like nuclear safety officer. On balance, I'd say the junior Navy pilot has considerably more nonflying duties, but it is getting tighter all the time in the Air Force. Once the Air Force pilot gets to the senior captain/major level, the administrative duties are comparable.

Q. Do you think the Navy system of collateral duties affects safety?

A. I think it's probably better to concentrate more on flying in the first years after designation than on administration. I really wonder if there is a need for some of the junior officer duties that are assigned to Navy junior officers. Does a squadron really benefit from having a nugget JG as radar branch officer, for instance? The chief is certainly more knowledgeable in the systems and has displayed leadership and management ability; otherwise, he wouldn't be a chief.

Q. The rationale is that he is being groomed for division officer, then department head.

A. I realize that, but the Air Force has no comparable system, and we seem to produce middle managers of comparable ability without this experience.

Q. How about the Air Force career patterns? The naval aviator today can expect only two flying tours before he screens for command. Thus, he can be in a nonflying status for as many as 5 consecutive years early in his career, pursuing a subspecialty or performing in a disassociated tour. Does the Air Force work on a similar basis?

A. Not really. The Air Force spends a lot of money to train its aviators, so it wants to get the most flying out of them possible. A typical career pattern is to stay in a cockpit for 7 to 10 years after designation, then have a nonflying, rated specialty tour. Right after that, though, you can expect to go back to a cockpit, assuming you're still a charger. Thus, I'd say the average 20-year man probably spends 14 to 16 years in a flying billet.

Q. Since the Navy's philosophy is that you're an officer first and a pilot second, the officer fitness report has just one block evaluating aviation ability. Is this the way it is in the Air Force?

A. Not to the same extent. You are considered a pilot first, and your efficiency rating (fitness report) is more extensive on aviator qualities than in the Navy. In the Air Force you have to perform administratively, too, but I've known many aviators who have gotten along in the system very well by being strong aviators and average administrators.

Q. What recommendations would you have for Navy safety?

A. That's a question I was asked often, and it's a hard one to answer. I just can't get over how dangerous the flight deck and carrier flight operations are. From a pilot's standpoint, I think ACLS is the wave of the future. It needs to be perfected and used routinely. I also think you need to keep pounding flight deck safety for the flight deck troops.

Q. How about the Navy's formal safety program? How effective did you think it was?

A. I'm reluctant to make comments about the Navy's formal safety program because I was exposed to only one or two squadrons, and their programs may or may not have been typical of Navy-wide safety programs. However, my impression from these squadrons was that the safety program could be more ongoing. In other words, it seemed that every time we had an accident, a safety standdown was the answer. And every time we laid off flying for a while, a safety standdown was the answer. We had so many of these intensive 1- or 2-day safety shots that they lost their effectiveness.

Q. How do you think we can improve the maintenance problem that you discussed earlier?

A. This is a problem. By nature of the Navy's operations, you have to maintain a mobile maintenance organization, and you have a host of nonrelated functions for your maintainers to perform. I would think that the Navy could move toward making its maintenance personnel more exclusively maintenancemen. I don't know how you can expect a man to fix aircraft for 12 to 16 hours a day and then send him off to patrol the hangar or flight deck for the rest of the night. I realize that carriers are constrained by the number of personnel they can hold, but establishment of specialized forces such as the Air Force has, might nevertheless still be feasible.

I'd like to emphasize that it's really hard to equate Air Force and Navy safety programs and operations since they have some very basic requirement differences. What works well for the Air Force might be totally unworkable for the Navy. I think, however, that each service can learn from each other, and that's the purpose of the exchange program. I really enjoyed my tour with the Navy, learned a lot from it, and wouldn't have done without the experience for anything . . . *Thanks to Approach*

An A-7 Corsair II catching the wire on the aircraft carrier USS Independence.

WARNIN
BEEN DETER
TIME ON Y
CAN BE D

UNSPOKEN RISKS

1Lt Dennis Snee
381 SMW, McConnell AFB

You may think the primary dangers of missile crew duty are the hazards inherent in the weapon system. That's not necessarily so.

I've been on a missile crew for almost three years, and I can testify to the following actual dangers that have "done in" more missile crewmembers than all the weapon system mishaps in SAC's recorded history. In the interest of saving space, we will exclude from this list the famous foil pack whose risks have been considered at length elsewhere.

In my judgment, the real pitfalls of missile duty stem from the great stretches of unoccupied time the crewmember finds on his hands between changeover and, say, changeover. Of course there are plenty of things to do and get done while on alert, but the tendency sometimes is to telescope all required actions into as short a time as possible, thereby maximizing on-alert free time. Even some of the required tasks expose the crewmember to a few of the unspoken risks. For example, excessive sitting.

Readiness monitoring is by nature a sedentary activity, but a year or two of crew duty can develop in an otherwise mobile person a knack, if not a preference, for that position. Sitting can be a good and beneficial thing, done in moderation. But missile crew duty can result in a preoccupation with the position that can border on the unhealthy.

Air Force office jobs, which missile crewmembers like to compare their duty with from time to time, also call for periods of being seated. But not on the order of alert tour sitting, which may be considered serious sitting as opposed to casual sitting or intermittent sitting. This is partially understandable when you consider the options an office job offers that missile duty does not. Looking out a window, for example. If missile crewmembers had this option, perhaps they wouldn't sit so much.

It is not general knowledge, but this inequality was once noted by a squadron commander at a northern Minuteman base who proposed adding windows to Minuteman launch control centers. The idea was unanimously rejected as nonsense — utter garbage.

The risk of excessive sitting might at least be reduced if the missile crewmember had the opportunity of strolling to the officer or NCO club for lunch, or taking half an hour off in the afternoon and going for a haircut. The dearth of walking space and singularly uninspiring scenery in the average missile launch facility, however, encourages staying put. I understand that a task force at the Pentagon is currently looking into the idea of making control center chairs less comfortable so as to discourage lengthy periods of sitting, but studies such as these can take years.

Another unspoken risk the crewmember faces is picking up the habit of indiscriminate snacking. Snacking is an honorable American pastime, and rightly so, but prolonged periods of crew duty can turn a man into a compulsive in this regard. I've seen it happen. Any human being who consumes two cans of those symmetrical little potato chips, a large bag of delicious corn chips, a jar of dry roasted cashews and a package of cheese spread in the course of a 24 or 40 hour alert, is asking for some kind of health problem.

When I first came on a crew, I

G: IT HAS MINED THAT UR HANDS NGEROUS!

found it odd that grown men should fortify themselves for an alert with six packs of soda pop, handfuls of beef jerkey, boxes of pretzels, packages of cookies and staggering quantities of other snack foods, all to be eaten, not in a quest for nourishment, but merely to pass the time.

An instructor at Vandenberg warned our class of ORT students to be especially aware of this particular unspoken risk. He pulled no punches; he said he'd seen it happen when he was on a crew. Men with promising Air Force careers would begin their tour spry, fit, excellent physical specimens. Four years, and hundreds of bags of goodies later, they would emerge from their final alert tour with a paunch — prime candidates for the weight control program.

The third unspoken risk I offer for consideration is perhaps the most insidious. It is a recognized evil, a legitimate scourge, and it can flourish among our otherwise venerable crewmembers. If you haven't already guessed, it's that habit that Surgeon General so often addresses: cigarette smoking.

What it is about crew duty that induces so many nonsmokers to start, and so many light smokers to become heavy smokers, even the 3901st can't say for sure. It's just a fact of missile crew duty, but it could have something to do with keeping the hands busy.

Adjusting the squelch and volume on an HF radio is certainly fun, but crewmembers eventually tire of it. Page-checking a Dash One is also rewarding, but that too gets old.

So what's left? For many crewmembers, either smoking or bringing a set of Lincoln logs on alert.

Not all crewmembers fall into the cigarette habit, but those that do sometimes fall hard. My first MCCC bought a carton of cigarettes before every alert. One carton. Although he never finished an entire carton, he would puff up a sizeable dent in it. The pertinent fact in his case was that he began smoking when he started missile training, when he would sneak two or three cigarettes from his wife's purse each morning. After three years as a launch officer, he was the carton man.

I'd like to see statistics on the missile force's incidence of respiratory ailments. The exact causal link between the increased consumption of tobacco products and missile duty is not known; however, the answer may be related to the nature of the job.

Whatever it is, from pre-departure to changeover, and from changeover back to base, missile crewmembers can fall prey to this unspoken risk.

The dangers of missile duty are noted here purely in the interest of safety. If they strike a chord with even one missile crewmember, or prospective missile crewmember, and alert him to the snares that lie in his path, then this article will have served its purpose. Missile crew duty is sometimes a temporary stopover in the career of an Air Force member, these dangers, pernicious as they are, generally terminate at the end of a missile operations assignment. Then the former crewmember will have to find his own excuses for sitting, eating, and smoking.

A sense of duty has compelled me to point out these unspoken risks associated with missile crew duty, but I must close here, since I have an alert tomorrow and I presently find myself out of cigarettes, low on potato chips, and soda pop. To the commissary!

BIG INSTRUMENT

"....GOING VISUAL...."

Capt Lewis M. Hatch
1st Combat Evaluation Group
Barksdale AFB

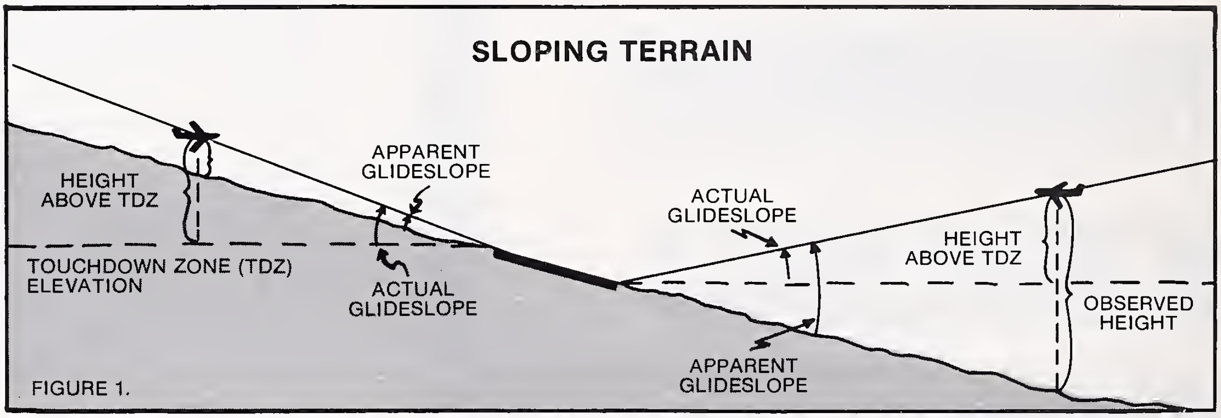


FIGURE 1.

A National Transportation Safety Board (NTSB) Special Study was recently released, entitled "Flightcrew Coordination Procedures in Air Carrier Instrument Landing System Approach Accidents." The study analyzed 17 air carrier accidents that occurred during ILS or localizer approaches, from 1970 through 1975, and included 13 undershoots (landing/impacting short of the runway), 3 overshoots (landing long) and one hard landing. The report stated, ". . . that almost every mishap occurred after the flight crew had seen either the ground, the airport, or the runway environment. Data disclosed that the pilot apparently was unable to assess correctly the flight path or descent angle of his aircraft during the visual segment of the approach." Two causes of the accidents cited by the study were, ". . . visual illusions and inadequate altitude awareness." Let's review some of the more commonly experienced visual illusions that may affect altitude or attitude awareness, and some methods of reducing their effects.

SLOPING TERRAIN

One cause of potentially hazardous landing illusions is the terrain beneath the final approach segment of the approach. A significant up or down slope within this area may make it difficult for a pilot to accurately assess his height above the landing area or determine the proper glide slope with reference to visual cues alone (Ellsworth AFB). A pilot flying a final approach over rising terrain without glide slope information will perceive that he is higher than he should be as compared to a normal "flatland" final approach (Figure 1). Additionally, the terrain gradient will make his glide slope appear to be steeper than normal. Descending to what appears to be a normal final approach will result in a long, dragged-in final at best, or, in the worst case, impacting short of the runway. In conditions of reduced visibility, obstacle clearance may also become a problem. When flying over down sloping terrain, the aircraft appears to be closer to the ground (and actually is) and the glide slope appears to be shallower than normal. This may result in the pilot delaying the descent or actually climbing, resulting in a steep final approach path. This will precipitate a higher than normal rate of descent into the flare.

An effect very similar to that created by rising terrain may occur where an airfield is situated on elevated terrain or a plateau (Offutt AFB). In this case, excessive glide path angle may not be perceived but excessive height above the ground is (Figure 2). The results are generally the same.

RUNWAY GRADIENT

Although positive runway gradient will produce roughly the same effects as up sloping terrain, the sources of these effects are independent. While illusions caused by terrain up slope rely on a pilot's interpretation of his height above the ground and his flight path angle with respect to the terrain, the illusions caused by runway gradient are based on the visual perspective of the landing surface itself. These effects become most pronounced during conditions of darkness or reduced visibility, when runway lighting may become the sole visual reference with the landing surface (Figure 3). The illusions produced by sloping terrain and runway gradient become most convincing when they occur in combination and the slope of the terrain and the runway gradient are in the same direction.

AIRPORT LIGHTING

Lighting may serve to intensify the effects of existing visual illusions (runway gradient as mentioned above), or it may create illusions of its own. The major problem presented by the illusory effects of lighting is that these effects usually occur when the visual cues normally used for altitude and glide path assessment are unavailable.

As an example of lighting intensifying existing illusions, let's take your average, highly skilled, steely-eyed pilot, who has made his last 300 landings on a 300 foot wide runway, into a 150 foot wide stripe. One of his primary cues to flare the aircraft for touchdown has been the apparent width of the runway as he sees it in his peripheral vision. During daylight VMC he is not in bad shape. Other peripheral cues take over and tell him he is getting low. He may flare abruptly and bounce slightly, but he

Continued on page 30

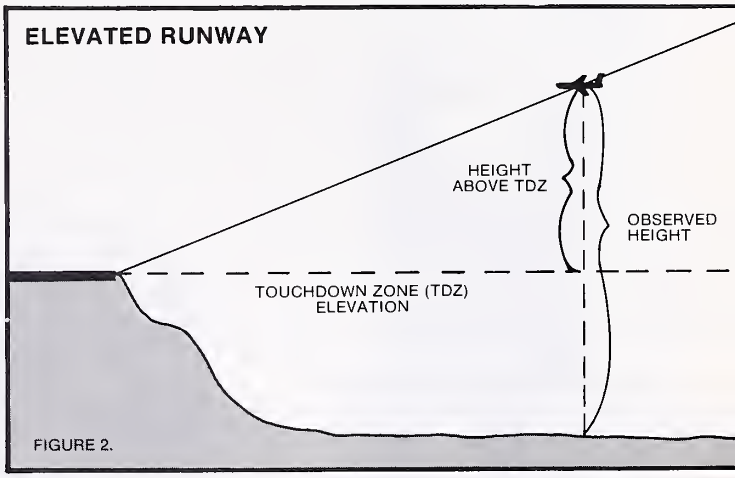
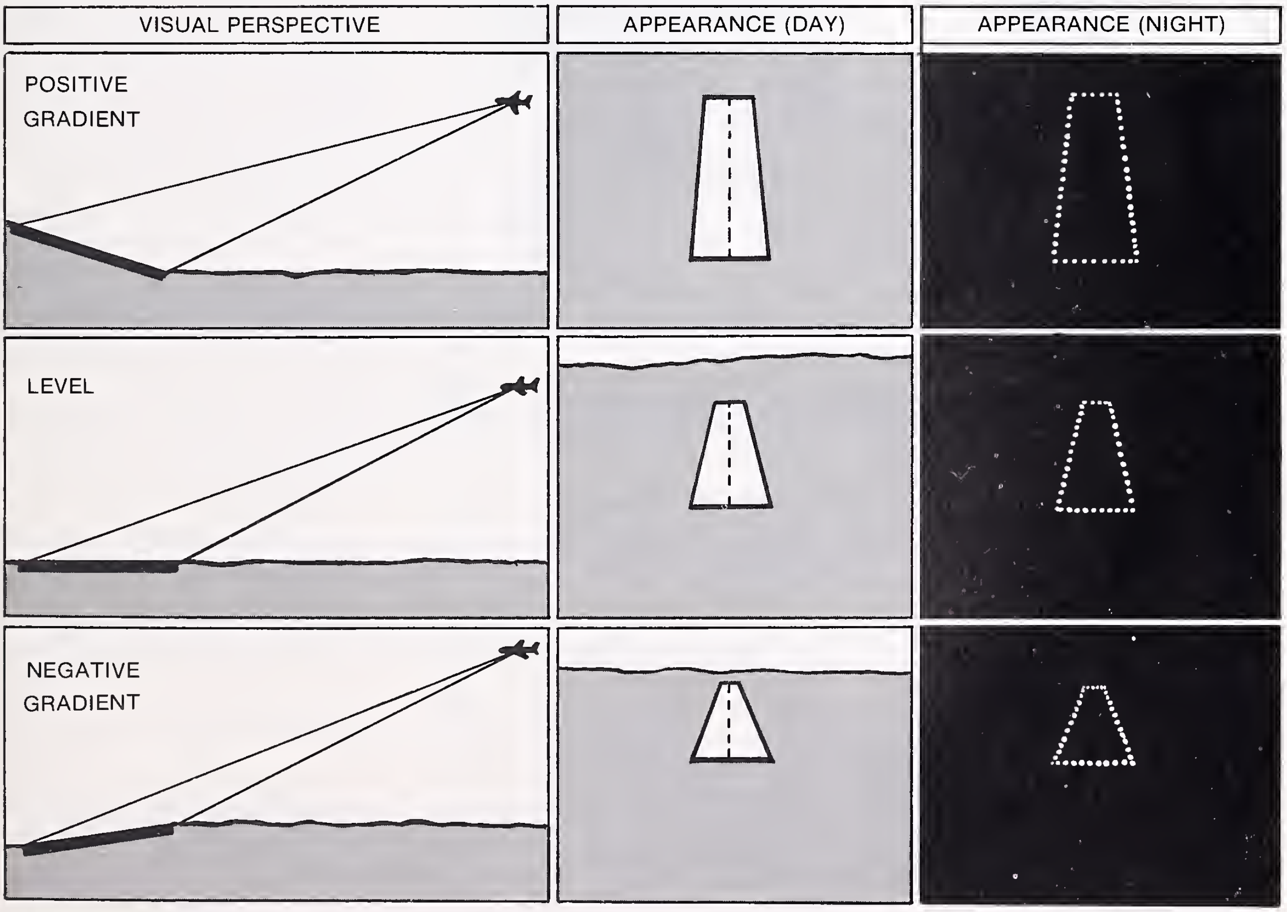


FIGURE 2.

FIGURE 3.

RUNWAY GRADIENT



Crew View

TIME: CAN YOU CONTROL IT?

Major Peter W. Wright
HQ Air Defense Command
Cheyenne Mountain Complex, Colorado

"It cannot be accumulated like money or stockpiled like raw materials. We are forced to spend it, whether we choose to or not, and at a fixed rate . . . It cannot be turned on and off like a machine . . . it is irretrievable." It is time. Nothing else can be managed by us until we first learn to manage this resource.

How many alert tours are you wasting? Have you begun any with some realistic objectives and completed them while on alert during your free time? Have you finished an alert tour rationalizing that you did not have enough free time or had too much ground training to accomplish any of your objectives; thus never completing or perhaps not even starting a project you had wanted to a week earlier? Perhaps one or a few of the following ideas can help you gain the extra time you feel you do not have on alert.

Where is all this time alluded to thus far? There are 168 hours per week, granting you a nine hour duty day for five of the seven alert days and nine hours of sleep per night and 14 meal hours each week you find there are 46 hours. This is a low estimate of time for you to accomplish anything you want. As much as you may not wish to admit it, if you look hard at a week's alert schedule you can probably find about 72 hours of unscheduled time. Without further analysis of an alert schedule, as there are always exceptions, let us agree that there is time available to you and there are projects and/or goals you look forward to accomplishing (but cannot seem to) during alert.

Let us establish now that your motivation to use your time wisely is a factor. As to the use of your time, we already know what we want to do. We have simply lacked the determination or the willpower to do it. The common factor in all executive work is navigation — knowing where you want to go, what shoals you must avoid, what the forces are with which you must deal, and how to handle yourself . . . effectively and without waste, in the process of getting there.

Inherent with most alert duty is the physical restriction to the alert facility, which immediately limits completion of certain goals. However, there are, among the many areas wherein one's time could be wisely spent those of job knowledge; professional, civilian, and self-education; additional squadron duties; athletics and/or a hobby. A specific list is limited only by your interests. All areas or goals involve work on your part. Your perspective of this additional work is the first key to its successful completion.

Making work pleasant sounds fine, and we all know it is not impossible. Have you ever said "I can't play cards now, I want to go read about something in the Dash-1"? Probably not. But, if you know you need to review a specific area before your next check-ride, you just might refuse playing cards. The point is that we have priorities and will occasionally make use of our time when we know we have to. At other times we should "look for a challenge — even in the most routine and uninspiring sort of task." Reroute your activity emphasis. Plan to perform better today than yesterday. Don't let your paycheck, or the next promotion, be your only motives for good performance. Become an expert in all aspects of your job. Expert performance takes work, work you can do on alert for your own ultimate benefit.

"The principle of increasing your output is this: Output is related to refinement of technique — as you refine your techniques of self-management you will increase your output." "Approximately 80% of our potentially productive time is wasted even though we may have set goals and have the desire to accomplish them." Have you started to study for two hours only to end up with an hour and a half nap? The following ideas may help you avoid some of the more common time-wasters. Although not new, perhaps you have not consciously thought about them lately.

A primary time-waster is failing to take a few minutes each day to organize what you will do on that day. Almost any time-management consultant will emphasize this fact. Few of us pre-plan our objectives in writing. Why? Because we feel such a ". . . course of action limits our freedom." Nonetheless, even with a set list we retain freedom of choice of projects on that list. Take a few minutes to write your list of things to do. If you do not want to start the day a few minutes early to plan your free time, do it just before going to sleep the night before. Either way, make your plan and write it down. Your list may be long or short, but be specific. Do not, for example, write "study Dash-1, six to eight pm;" rather write "study Dash-1, section one, six to eight pm." Be specific and realistic. Do not waste time by including such things as eating, sleeping, et cetera, on your plan for the day.

Next, take your list and set your priorities. Rank the goals or projects to accomplish in order of priority, e.g. 1, 2, 3, or A, B, C. Double-check your list before you start; it will probably reveal that one or more of your objectives are out of order, or should be done another day or another week, or perhaps not by you. Your list must be realistic. If you want to read a 500-page book, you have to allocate ample time based on your reading and comprehension speed. Obviously a novel will not need as much time as a textbook. Allocate your time accordingly. Your list should contain attainable goals that are clear to you. If you do not accomplish everything on your agenda, take a few minutes at the end of the day and analyze your success and/or failure. Effective planning, organizing and review would probably be included in an objective approach to management in business and should be part of your own approach in effective use of your time. The time used to prepare, organize and analyze your list will initially take longer, but will eventually save you time as you better understand your work habits and capabilities.

There is a right time to do the things on your list. Mr. Alan Lakein divides time into two categories — "prime time and availability time." Prime time is your alert (no pun intended) time. This can be during the morning, afternoon, or late at night and is best known by you. This is when you are able to concentrate better and when you should schedule those tasks that require your attention the most. Availability time can be termed a time for others, be it for business or pleasure. As you can readily see, your list could be further prioritized to include this time grouping. There is one other time that most of us waste, according to Mr. Lakein. This is "waiting time." In striving never to be late, many of us plan to arrive early . . . take some work with you. For example, when you arrive early for an appointment, some of the tasks on your list, even the making or checking of it, could probably be worked on during waiting time.

Noise and interruptions, while not always directed specifically at you, are the main causes of your wasting time on alert and can be avoided. If you want to study, but cannot find a quiet place at the alert facility, have you thought about using the squadron mission-planning room at night or during the weekend? Have you ever used an alert truck to avoid the socializing and interruptions that invariably occur in the alert force library? Most people will not bother you or look for you in the alert briefing room on weekends. When you study in your room, is your roommate present? Do you read or study while prone on your bed or sitting at your desk? Do you study your Dash-1 after a big meal? When you study in your room do you leave your door open or closed? If your door is closed and you are studying, do you always acknowledge a knock on the door? When visitors come to your room, do you yield to a bull-session or tell them you will see them after you have finished what you are doing? A list of questions such as these is unending. Solving questions like these is really not as difficult as it may seem and will allow you to use your time on alert to your advantage. It is really only a matter of reinforcement of your willpower to get your objectives completed.

To this point you have, perhaps, remembered an alert tour that you, though unintentionally, have wasted when you really meant to get some work accomplished. Now you have been introduced (hopefully reintroduced) to some time management consultants' ideas on the effective use of time. You also have been given several ideas about avoiding the pitfalls interfering with concentrated study while on alert. Each of these ideas has been successfully used at one time or another. There are comparatively few people from whom you cannot learn something. Each organization has people who always seem to get twice as much accomplished as you do in the same amount of time. On alert, you will no doubt be with some of these people. Use some of your time and observe them — see what it is that they do which you do not. Learn something about yourself. Your findings may not only surprise you, but may work for you. Think about the value of time . . . especially your time . . . then plan and use it wisely.

PACER PLANK

Left: SSgt A. L. Freeman flight line NCOIC. Below: SSgt H. G. Coleman NCOIC, Survival Kit Section.

Captain Ronald G. Benjamin
384 AREFW/DOTL, McConnell AFB

In the English language there are certain words — call them "flag-words" — which elicit responses ranging from increased levels of attentiveness up to very strong reactions of fear, or even hysteria, in those who associate a special meaning with them. "Pacer Plank" doesn't seem to be the type of phrase that would particularly stir anyone up, or we at the 384th Air Refueling Wing Life Support Branch didn't think so when we first heard it, but we changed our minds when we found out what it was all about.

The Pacer Plank program was an extremely comprehensive effort intended to keep our aging B-52s flyable for years to come. As would be expected, it was a sizable task. The program began in January, 1975, with the arrival of the first bomber (out of a total of 80 due) at Boeing Wichita. While the aircraft were away from their home bases (Dyess, Carswell, Andersen and March) they received some very special attention from the Boeing people. Their lower wing surfaces were reskinned, leaky fuel cells repaired, a new rear wing spar was installed, all engines were removed and rewired, all the aircraft were given a paint job, and all emergency egress systems were updated. This last project involved McConnell in the program. The 384AREFW Life Support Branch was selected not only for its outstanding record of performance during the last several years; but the fact that we're located right next door to the Boeing plant might have had something to do with it. It was an affair of expediency and as we decided later (when we calmed down), an indication of the excellent management of the first planning phase of Pacer Plank . . . whether we liked it at the time or not.

Since the entire idea of the egress update was to remove the old "D" model ejection seats and replace them with a much improved type that was currently in use in the "G" and "H" model bombers, managerial expertise had its chance to strike again. It was determined that the ejection seats from the older model B-52E, which are in retirement at Davis-Monthan AFB, could be retrofitted, rehabilitated and installed in the Pacer Plank "D" models. These "new" seats provide a more powerful ejection, a more positive seat-man separation, earlier deployment of the parachute, and would standardize all B-52 egress life support equipment. In short, it's a better, safer seat. However, it does require the use of different survival kits and modified parachutes. This is what made the location of McConnell AFB so important. The task, as defined by SAC/DO, would be to meet the bombers as they arrived, remove the seatpacks and parachutes, perform required modification, inspection and storage, and then place the updated equipment on the modified bomber immediately prior to its departure some 120 days later.

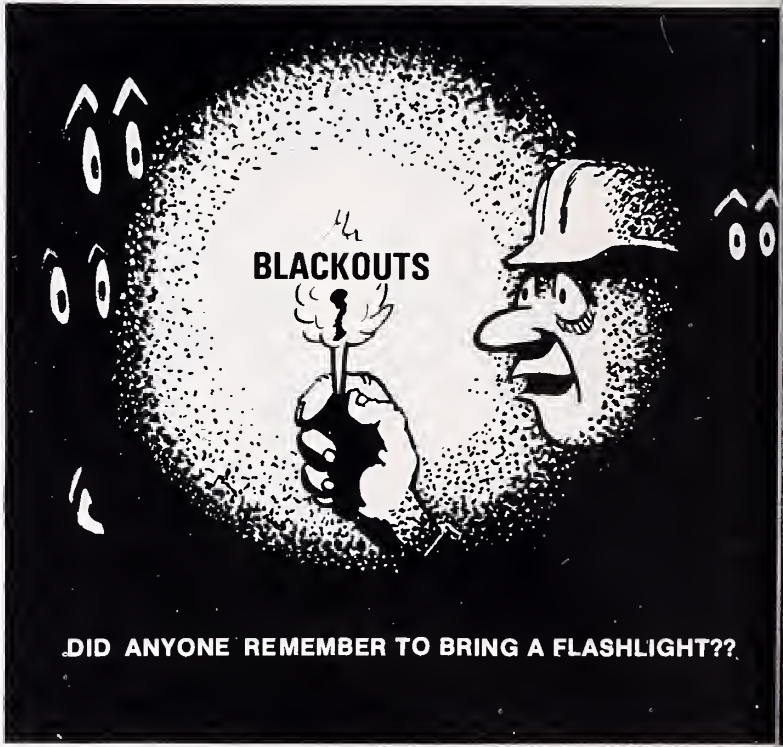
As the pivot point for the survival equipment for Pacer Plank, we found that our largest problems were the last minute changes of aircraft. Our second largest problem was logistics. In order to obtain the proper types and quantities of seatpacks (there were two types used for the retrofitted seats) and have the parachute modification accomplished, we had to coordinate closely with five major Air Logistics Centers, Det 21 of the Air Force Contract Maintenance Center (AF Logistics Command) at Boeing Wichita, SAC, 8AF, the receiving bases for all the bombers, and the Boeing Company itself. With so many agencies involved, the dissemination of information to all interested parties amounted to a significant obstacle at times, which brings us to our third largest problem . . . communication. This could easily have been our number one hassle if it hadn't been for all the people who were truly interested in the success and on-time completion of Pacer Plank. The majority of the difficulties in this area occurred early in the program, before the relationships between various agencies were defined. Fortunately, this type of snag became less and less common as the various agencies learned that they couldn't operate independently of the others. By the end of the two years of Pacer Plank, we had received a total of over five dozen teletypewriter exchanges (TWEX), sent out around 20 ourselves and had made countless hundreds of phone calls. All of this communicating made conflicts and misunderstandings quite uncommon, even with so many fingers in the pie. Problem number four was manning . . . as in under. We handled that problem with TDY assistance, a few 10 and 12 hour days and a few working Saturdays.

As you can see by now, a large program like Pacer Plank can have a significant impact on a small shop such as ours. We had to greatly expand our facilities in order to accommodate the volume of materials we were expected to handle. We all received training in B-52 egress systems and safe seatpack and parachute installation procedures. We altered our previous routine to make time for both our tanker commitment and our newly acquired obligation to the bombers.

In retrospect, it doesn't seem so tough . . . but then it seldom does. Our human tendency to forget about the really trying aspects of a challenge and concentrate on its more redeeming qualities, such as the personal growth and the opportunity to see "The System" in action, can lull us into a sense of modesty for our accomplishments. We don't like to remember the lost shipments of equipment when supplies were low, or to remember the frantic AUTOVON calls to busy numbers, or how some of our guys had to work all weekend to pack kits for a short notice Monday departure. No it wasn't hell . . not even close. But it was not a snap, either. We had persistence, patience and heart, and we got the job done. Which is what this was all about.

Personnel of the 384 ARW Life Support Branch.

MISSILE MISHAPS


BLACKOUTS
DID ANYONE REMEMBER TO BRING A FLASHLIGHT??

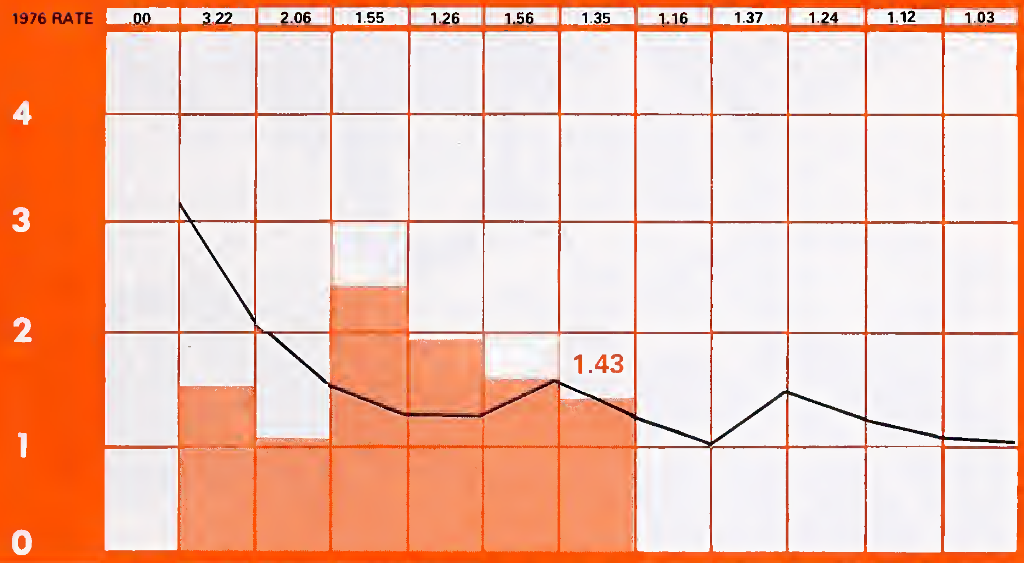
This is the time of year we experience the hazardous effects of thunderstorm activity. The following mishaps were attributed in part to thunderstorm activity.

MINUTEMAN. A launch facility (LF) experienced commercial and standby power failure. A maintenance team was dispatched and began troubleshooting procedures. Meanwhile, commercial power company electricians were replacing two damaged power transformers outside the LF fence. When the power company completed their maintenance the FMT team attempted to restore site commercial power in accordance with tech data. The team experienced difficulty observing the sensing relay 47C contacts in the automatic sensing unit through the dirty cover, so the cover was removed. Still unable to determine the position of the contacts, the team removed the 47C device from the automatic sensing unit. At that time the site went status out and reported VRSA channel one. Later the team performed emergency shutdown due to the motor generator smoking. Investigation revealed internal damage to the motor generator, a burned up RFI filter and switch assembly in the B-plug linear actuator assembly. Cause of the mishap was attributed to the commercial power company incorrectly wiring the transformer's external to LF which resulted in reverse phase power being applied to the automatic sensing unit. Sensing relay 47C prevented this power from being accepted at the LF. Removal of the 47C device from the ASU by the FMT team defeated the undervoltage and phase reversing sensing and caused reverse phase power to be applied through the ASU to the motor generator and associated LF electrical components. As a result of this mishap, a tech data change has been submitted to add a caution advising that damage to equipment could occur if the 47C device is removed from the ASU. Also, additional emphasis is being placed in this area in maintenance and safety training and it is being publicized in a Mishap Prevention Brief.

MINUTEMAN. A launch facility reported VRSA channels 23, 24, and 25 which indicated an environmental control system (ECS) malfunction. The responding maintenance team discovered the ECS operating in the soft support building, but neither the normal air-conditioning unit nor the emergency fan were operating in the launcher. Failure of this equipment resulted in an overheat condition of equipment racks which damaged five electronic drawers. Troubleshooting of the ECS by the technical engineering division failed to reveal any malfunction. In addition, the malfunction which caused the mishap could not be duplicated. There was thunderstorm and lightning activity in the area at the time of the mishap and theories are the ECS failure resulted during a power fluctuation due to inclement weather.

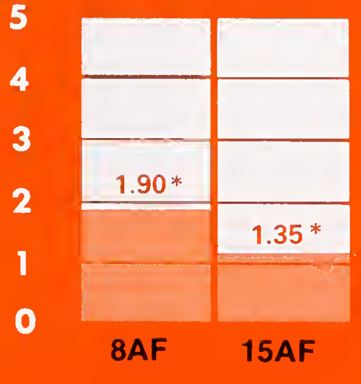
1977 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	0	2	0	0	0	1	0	0	1	0	0	0
1977	0	1	0	2	0	0	0					

1977 SUBORDINATE CMD RATES

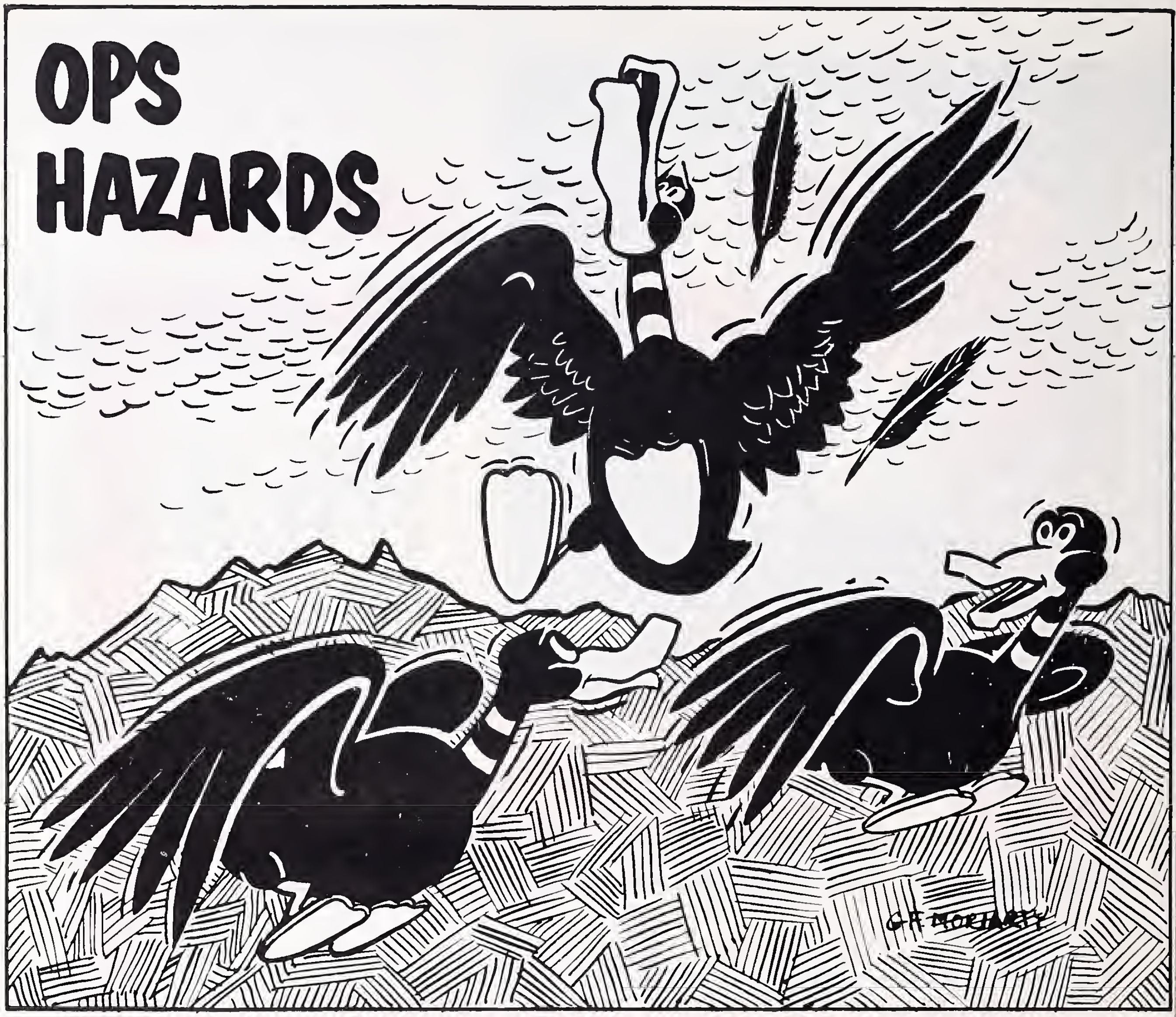


LEGEND ⁀ =1976 RATE
* ESTIMATED

MISHAP STATUS

FB-11	FEB 77
B-52	APR 77
KC-135	APR 77

OPS HAZARDS



IT LOOKS LIKE DRAKE IS FLAPPED OUT!

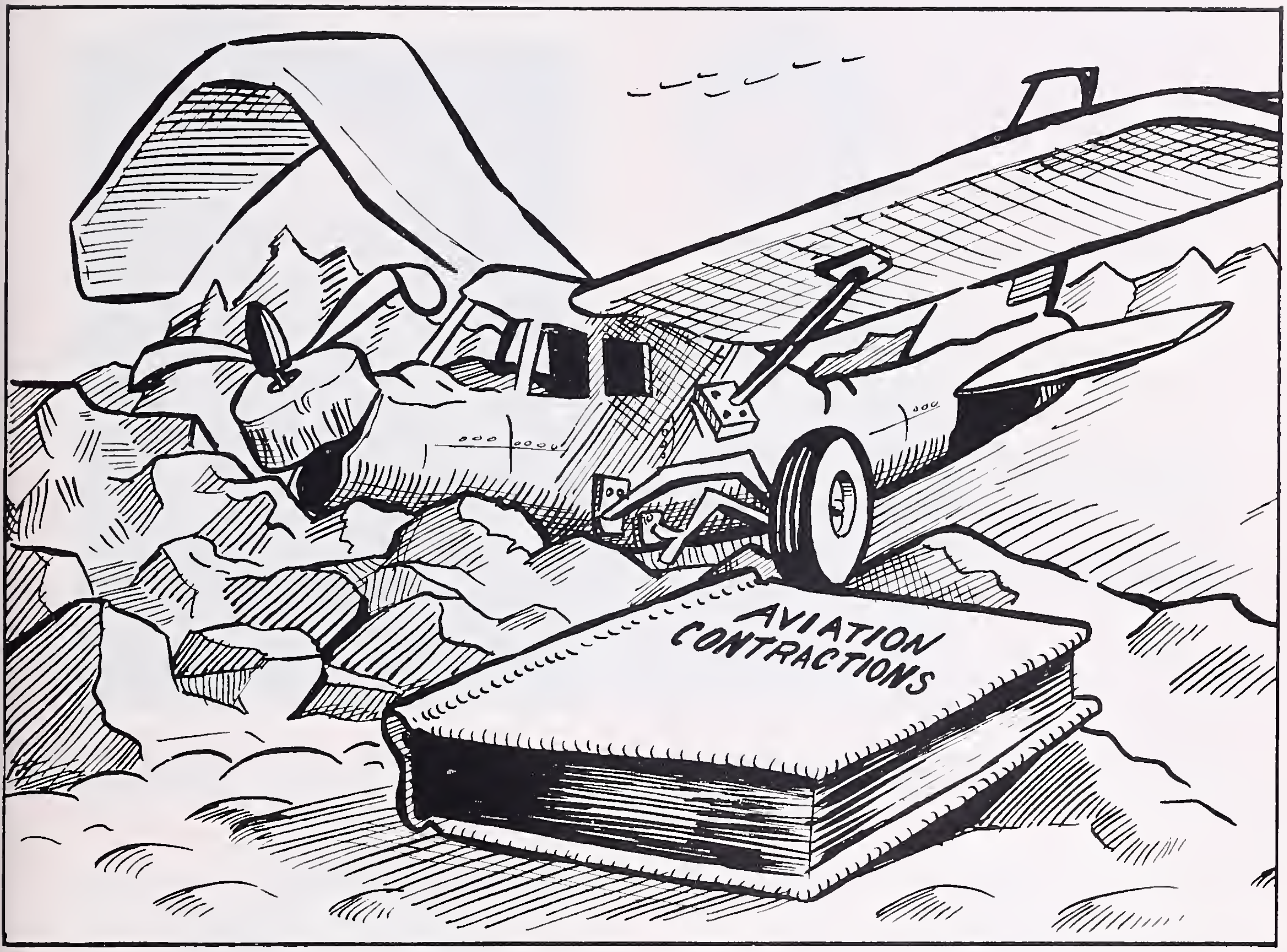
A B-52 crew was returning home from a normal training mission. During flap extension, the aircraft was observed to have a rolling movement to the left. The copilot noted the left flap indicator was zero while the right flap was reading 20 degrees extension. The pilot directed the flaps be stopped and returned to the up position. The flaps then indicated full up.

A second attempt was made to lower the flaps using the normal system. After only three to five degrees of movement of the right flap, it was noted that the left flap was not moving. Movement was stopped and all flaps returned to the full up position. An uneventful no flap landing was made.

Investigation revealed the driveshaft had sheared between the two flap screws on the inboard flap segment. This allowed the inboard half of the inboard flap to move while the outboard half remained stationary which resulted in tearing and buckling the inboard flap.

The Dash-One says when any unusual rolling moment is encountered during wing flap operation or the flap indicator needles become unsynchronized, immediately place the flap lever to off. If the flaps are less than 25% down, which they were in this case, you should move the flap lever to up and monitor the needles to insure that both are moving in the up position. Up to this point the crew demonstrated a good knowledge of Dash-One procedures and quick accurate reactions to the situation.

However, the combination of the rolling moment and the unsynchronized needle should give the pilot positive evidence that he will encounter an asymmetrical flap condition should he elect to try lowering them again.



A civilian aircraft was operating on an IFR flight plan at 10,000 feet MSL along a victor airway. The airplane was 3000 feet below the MEA for that segment of the airway and presumably crashed, although no wreckage has been found.

Investigation of this mishap revealed that a current Notice to Airmen (NOTAM) read "AKN BAK-12 CNTR 11/29 OTS," indicating that an arresting system at the destination airport was out of service. The remarks section of the pilot's IFR flight plan read "AKN BC 12 OTS" indicating that he believed a localizer back course for runway 12 was out of service. Based on the disparity between the NOTAM and the pilot's remarks, investigators believe that the pilot misunderstood the NOTAM. Some aviation contractions are ambiguous because various segments of the aviation community use contractions which are not standardized. See example.

Contractions	Meaning	Source
OTS	Out of Service	Airman's Information Manual
OTS	Organized Track System	ATC Handbook 7110.65
O/S	Out of Service	Flight Information Publication
OT	On Time	Contractions Handbook 7340.1E

Although the pilot's apparent misinterpretation of the NOTAM was not a causal factor in this mishap, commonly used contractions should be standardized and should have precise meanings.

The National Transportation Safety Board has recommended that the Federal Aviation Administration:

Standardize word and phrase contractions contained in Federal Aviation Administration publications or in interagency publications approved by the Federal Aviation Administration, to assure that there are no authorized abbreviations with dual meanings, or different abbreviations with the same meanings, used for air traffic control, communications, or associated services.

PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in SACR 127-2.

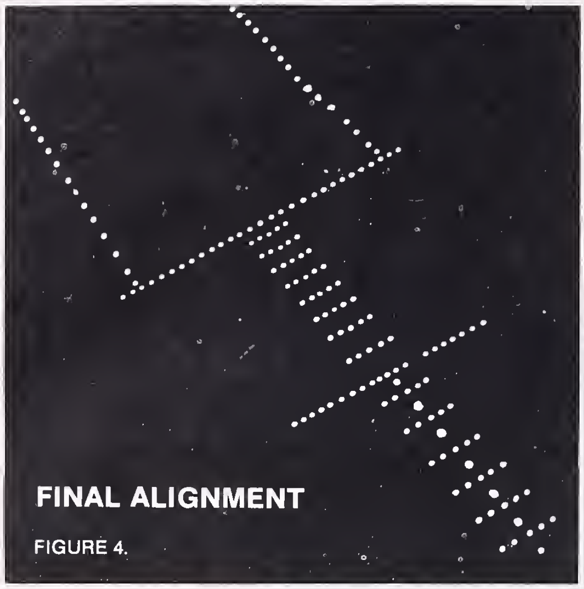
HEADS UP FLYING CLUB. SSgt Prue E. Compton, Jr., 452 Air Refueling Wing, March AFB.

Sgt Compton's aircraft was one of three KC-135s assigned to refuel a flight of A7Ds. Sgt Compton, in number two position, cleared his number one fighter from pre-contact to contact position and made the contact. Three contacts were required to complete the offload. On the final contact with the first receiver, the A7D gradually began to approach an outer boom limit. At this point, however, both the azimuth and elevation positions of the boom were perfect at 0 and 32 degrees respectively. As the receiver reached the outer boom limit, he had obtained his required offload and was disconnected. Sgt Compton then reset the boom system to ready and cleared the number two A7D to the precontact position. The boom extension was 10 feet. Sgt Compton cleared the number two receiver to the contact position but noted that his extension footage was at 14 feet for no apparent reason. Sgt Compton directed the receiver pilot to return to the precontact position, stabilize and await further clearance. He then retracted the boom to around six feet then began extending it again. As the boom approached the 10 foot mark, it fell like a lance to full extension. Realizing that he should have retract pressure from the accumulator, Sgt Compton began retracting as quickly as possible. He reported boom control problems to his aircraft commander who replied, "We have just lost our right hydraulic system" and directed "stow the boom now." The boom was flown up and latched without hydraulic assist. During this time the receiver reported heavy fluid leaks from the boom pod area. Inspection of the boom after landing showed that the extend pressure line had severed allowing the boom to gravity fall from the 10 foot position to full extension. If the receiver aircraft had been aligned on the boom at that time, heavy damage could have been inflicted on the A7D and both aircraft and crews would have been in peril.

MINUTEMAN Crew E-123, 91 SMW, Minot AFB: MCCC 1Lt Michael R. Durr, and DMCCC 1Lt George B. Tredway.

MAINTENANCE MAN. MSgt Robert W. Conner, 42 Organizational Maintenance Squadron, Loring AFB.

TITAN Crew S-068, 390 SMW, Davis-Monthan AFB: MCCC Capt Michael P. Wiedemer, DMCCC 1Lt Gill S. Paszek, BMAT SSgt Kurt L. Rein, BMFT SSgt Glenn P. Allen.



FINAL ALIGNMENT

FIGURE 4.

BIG INSTRUMENT

continued from page 19

makes a safe landing. Under night conditions, however, he no longer has the horizon or peripheral cues to save him. So he drives down final and intends to flare when the runway lights appear to be in the same position as they are on his own 300 foot wide runway and . . . "Oof! Take that, Runway!" To make the lights of a 150 foot wide runway appear to be the same width as the lights of a 300 foot wide runway, he must drive through the flare point (and probably through the runway). His only salvation would have been a little mental preparation, judicious use of the radio/radar altimeter (as a backup, only) and all the aircraft lighting he can get (remember the terrain clearance light?).

Another illusion may be caused by the relative intensity of the runway lights, or by the absence or abundance of other light sources around the airport. Many of you have observed this while cruising at high altitude. When runway lights are on high intensity, or when there are very few surrounding lights (called the "black hole effect"), you will appear to be much lower and closer to the runway. This can become extremely hazardous at a lower altitude under an overcast. It has caused many pilots to depart an MDA early and get a low-level tour of the hills, rocks and trees. This effect may be very pronounced in fog or other obscurations where individual approach lights may appear larger than their actual size due to the illumination of the obscuration. The opposite effect is possible, of course, with dim lighting or where there are many background lights (a big city, for instance).

APPROACH LIGHTING AND FINAL ALIGNMENT

Put yourself in this situation. You are flying an ILS approach to "bust" a 200 foot ceiling with fog. At just above 200 feet the copilot calls visual. You see the glow of the strobes but continue on instruments for a short while. At about 150 feet you look out the windscreen and see (Ta-Da!) Figure 4. How do you line up with the runway? A left bank? A right then a left bank? Or, are you in a right bank? The wrong time to make that snap decision is descending through 100 feet AGL. The only way to properly interpret this picture is to be mentally prepared for it from your last instrument crosscheck. *If you are surprised when you look out the windscreen, take it around.* At that altitude you don't have time to look back inside and interpret the lights. Making a correction at this point, if you weren't prepared for it initially, could result in this becoming a terminal approach in every sense of the word.

OVERCOMING ILLUSIONS

The primary method of remaining oriented on final approach is to use all available glide slope information. This includes VASI's, ILS glide slope or radar monitor. If you have to fly a nonprecision approach with no glide slope information available, a visual descent point can be invaluable to insure that you don't depart the MDA too early. Even without glide slope information, a good instrument crosscheck of altitude versus distance from the runway and rate of descent can help. For a 2.5° GS, you want to be 250 feet above the runway for each mile from it.

How about a little crew coordination? What happens on your aircraft when the pilot flying the aircraft calls ". . . going visual." If you're like most crews, all crew monitoring, crew coordination, and altitude calls cease at that point. Everyone is looking at the runway. If you think this isn't true of your crew, you're a rare case. The NTSB study quoted in the first paragraph indicated that in 16 of the 17 accidents studied, either a partial or complete breakdown of crew coordination occurred after visual contact was called by the pilot. They also found that, "Except for two approaches, the evidence was conclusive that from the time visual contact with the ground or the runway environment had been called both the pilot flying and the pilot not flying were relying upon or seeking visual cues; neither was monitoring the instruments. Both pilots were relying on the same source of external guidance in order to land, and any visual illusions present would be present to both pilots." There is a very simple solution to that problem. The USAF Instrument Flight Center and several airlines recommend that once the pilot flying the aircraft goes visual, the pilot not flying the aircraft returns to an instrument crosscheck. He is then able to inform the pilot of any deviation (airspeed, altitude, rate of descent, etc.) from a normal glide slope. Crew members should continue to monitor the approach all the way to touchdown. Remember, the approach does not terminate at the MDA/DH. It terminates in the chocks!

SAC SAFETY SCREEN

2 BMW, Barksdale Crew R-63: P Capt Michael D Sherman, CP 1Lt Howard G Woodruff, RN Capt Stephen D Herwig, N 1Lt William E Price, EWO 1Lt Charles R Broome, G SSgt Von J Burton

5 BMW, Minot Crew E-18: P Capt Eddie J Myers, CP 1Lt John S Householder, RN 1Lt Ronald L Hanson II, NN 1Lt Miles S Pound, EW 1Lt William J Carey, G SSgt Wayne Mooney

7 BMW, Carswell Crew IT-7: IP Capt William J Betz, IRN Maj Norman W Craven, IEW Capt Stephen M Ehrlich, IG MSgt Paul A Kiviaho

28 BMW, Ellsworth Crew E-107: P Capt Gary W Potter, CP 1Lt Edouard D E Sendral, NN Capt Terrance A Belland, IBO TSgt Charles D Orr

43 SW, Crew E-07: P Capt Brian A Arnold, CP 1Lt Rockwell J Larrabee III, RN Capt Thomas M Kearney, NN Capt William A Heath III, EW Capt John H Seward Jr, G SSgt James R Shirley

44 SMW, Ellsworth Crew S-204: MCCC Capt Gary M Wistrom, DMCCC 1Lt Robert R Lizak

90 SMW, F E Warren Crew E-183: MCCC Capt Roger P Houck, DMCCC 2Lt Gordon M West

93 BMW, Castle Crew IT-32: IP Capt Gary V Bishop, IN Capt Fredrick E Henthorne, IE Capt Ronald G Ornay, IG SSgt Kenneth A Henshaw

308 SMW, Little Rock Crew R-002: MCCC 1Lt Stephen F Brock, DMCCC 1Lt E J Hinchliffe, MSAT Sgt Douglas W Dow Jr, MFT SrA Louis McGibony Jr

319 BMW, Grand Forks Crew S-101: P Capt Lawrence C Roscoe, CP Capt Thomas R Straiton, NN Capt Gary G Crump, BO Christian A Russ

321 SMW, Grand Forks Crew S-211: MCCC Capt James Sweeder, DMCCC 1Lt Donald W Schields

340 AREFG, Altus Crew S-101: IP Capt Tome H Walters Jr, CP Capt Phillip S Cherry, IN Maj Robert A Hastings, IS MSgt Wilbert W Martens

341 SMW, Malmstrom Crew E-150: MCCC Capt John P Desmond, DMCCC 2Lt Michael J Cochrane

351 SMW, Whiteman Crew S-065: MCCC Capt Edward G Genaw, DMCCC 2Lt Gregory D Hofacre

449 BMW, Kincheloe Crew S-07: P Capt David Hauser, CP Capt Michael Rolbeck, RN Capt Raymond Yoh, N Capt Randall Bowlby, EWO Capt Larry Jacops, G SSgt Terrance Hughson

449 BMW, Kincheloe Crew E-107: P Capt Terry Gordon, CP Capt Walter Drelick, N 1Lt Henry Clark, BO SrA Raymond Harris

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW SACR 127-2*.

★ U.S. GOVERNMENT PRINTING OFFICE
1977-765-042/7

UNIVERSITY OF FLORIDA
3 1262 09305 0085

HALL OF FAME

TACTICAL FLYING

OVER TWENTY-ONE YEARS

170 AREFG, McGuire (NJANG)	NONE

OVER NINETEEN YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
157 AREFG, Pease (NHANG)	Jun '58
97 BMW, Blytheville	Aug '58

OVER EIGHTEEN YEARS

940 AREFG, Mather (USAFR)	May '59

OVER SEVENTEEN YEARS

307 AREFG, Travis	Sep '59

OVER SIXTEEN YEARS

19 BMW, Robins	Oct '60
151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61
134 AREFG, McGhee Tyson (TNANG)	Aug '61

OVER FIFTEEN YEARS

340 AREFG, Altus	Feb '62
301 AREFW, Rickenbacker	Jul '62
96 BMW, Dyess	Aug '62
449 BMW, Kincheloe	Aug '62

OVER TWELVE YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64
136 AREFW, Dallas NAS (TXANG)	Jun '65
320 BMW, Mather	Jul '65

OVER TEN YEARS

452 AREFW, March (USAFR)	Sep '66
92 BMW, Fairchild	Feb '67
55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER NINE YEARS

319 BMW, Grand Forks	Dec '67
22 BMW, March	Feb '68

OVER EIGHT YEARS

5 BMW, Minot	Feb '69

OVER SEVEN YEARS

42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70

OVER FIVE YEARS

7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
416 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72

OVER FOUR YEARS

376 SW, Kadena	Nov '72
379 BMW, Wurtsmith	Apr '73

ICBM

OVER THIRTEEN YEARS

381 SMW, McConnell	Nov '63
90 SMW, F E Warren	Jul '64

OVER TWELVE YEARS

1 STRAD, Vandenberg	Sep '64
308 SMW, Little Rock	Aug '65

OVER SEVEN YEARS

341 SMW, Malmstrom	Apr '70

OVER FOUR YEARS

390 SMW, Davis-Monthan	Jul '73

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.